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VIA ECFS

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street S.W.
Washington, D.C. 20554

Re: *Applications of AT&T Inc. and Deutsche Telekom AG for Consent to Assign or Transfer Control of Licenses and Authorizations*, WT Docket No. 11-65

Dear Ms. Dortch:

AT&T files this letter in response to questions raised during AT&T's and T-Mobile's meeting with Commission Staff on June 30, 2011. Specifically, at that meeting, Commission Staff asked whether the use of multiple bands for long term evolution ("LTE") wireless services would impair the existing global economies of scale in the research, development and manufacture of smartphones that exist with regard to current mobile technologies. To put Staff's question in context, today in the United States, both 2G and 3G services (as well as 4G HSPA+ services) are primarily offered using three spectrum bands: 850 MHz, 1900 MHz and AWS (1700 MHz) spectrum. Smartphones developed for larger wireless carriers, such as AT&T, thus can readily be adapted for use by smaller carriers as well, who operate on the same frequency bands as the larger carriers. LTE-based wireless services, however, will be provided over a greater number of spectrum bands than are currently used to provide 2G and 3G service. Nonetheless, for the reasons set forth below, the migration to LTE and the resulting increased diversity of spectrum used to provide wireless services will not have any adverse impact on the substantial global economies of scale that exist today.

Preliminarily, this concern has nothing to do with the merger. T-Mobile has no clear path to LTE. In the absence of the merger, T-Mobile would not be a customer for LTE handset producers (or for LTE infrastructure equipment companies), so any difference between the LTE

and 3G or 2G world is not merger-specific. The Commission's merger review, however, "is limited to consideration of merger-specific effects."[1]

In all events, as global handset maker Nokia has emphasized "the proposed transaction is unlikely to have any adverse effect on innovation in the device market or the availability of a wide range of devices with the most attractive features to all carriers."[2] The multiplicity of LTE spectrum bands has not diminished, and will not diminish, the substantial economies of scale that exist today in the development and manufacture of handsets. First of all, most of the costs of the design and development of a handset are common across all spectrum bands. The basic R&D costs involve the handset functionality and performance, and the design and development of chipsets, radios and antennas, all costs that can be spread across handsets later localized for individual spectrum bands. Beyond the R&D costs, a substantial portion of the manufacturing costs are likewise associated with components that are common to all markets (shells, screens, keyboards, batteries, antennas). Localizing handsets to particular countries is a function of the antenna design and enabling the appropriate functionality of the chipset (or, alternatively, the manufacture of radio transmitter/receiver components tuned to the specific frequencies needed by the carrier). These are a relatively small portion of the overall cost of handsets.[3]

Moreover, the history of development of handsets confirms that wireless handset manufacturers and wireless carriers are interested in both backward compatibility and broad global (roaming) functionality. This allows manufacturers to achieve greater economies of scale and scope with respect to handset research and development ("R&D"). A handset that can, with relatively minor adjustment, be sold in multiple countries to multiple carriers allows handset manufacturers to better spread the fixed costs of R&D across a broader base, which increases manufacturers' economic ability to develop and produce specific phones that meet the unique needs of a single carrier. As Qualcomm noted in a recent FCC panel, "[o]ur chips are all multi-mode (*e.g.*, LTE, 3G & 2G) & multi-band (cellular, PCS, AWS, and 700 MHz). We strive to provide support for the most capabilities and bands possible, within cost, size, & other

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[1] Order, *Applications for Consent to the Transfer of Control of Licenses from Comcast Corporation and AT&T Corp., Transferors, to AT&T Comcast Corporation, Transferee*, 17 FCC Rcd 22633, 22637 ¶ 11 (2002).

[2] Comments of Nokia, Inc., WT Docket No. 11-65 (June 10, 2011), at 5.

[3] *See, e.g.*, http://www.eweek.com/c/a/Mobile-and-Wireless/Motorola-Droids-18775-BOM-Costs-Tops-iPhone-Nexus-One-545381/ (reporting on Bill of Materials tear down costing by consulting firm iSuppli, and noting that top cost items were a microSD slot, the TFT-LCD screen, and touchscreen, and the camera; the tri-band Qualcomm chipset represented less than 7.5% of the total smartphone cost).

constraints, for devices using our chips to ensure that our operator partners can provide the widest possible interoperable coverage to their subscribers."[4]

The deployment of LTE on multiple spectrum bands will in no way change these incentives. To the contrary, manufacturers will continue to have strong incentives to maximize economies of scale and scope and the number of subscribers they can reach with any particular handset design. Indeed, as carriers roll out LTE in different bands globally, that will only increase the incentive of manufacturers to design and produce handsets that can work on as many bands as possible, so as to obtain the widest potential customer base for each handset. And "the device market has undergone significant shifts recently, with more manufacturers now being able to introduce advanced devices in much shorter development cycles."[5] Even if there are technical limits today to offering any specific handset capable of accessing more than 4 or 5 LTE bands, handset manufacturers competing in a global market will nonetheless want to design and produce handsets that allow as many wireless carriers as possible to service their customers through their domestic LTE bands as well as international roaming bands.

Thus, it is unsurprising that "major chipset manufacturers have announced plans to make available compatible [*i.e.*, multi-band] chipsets" for LTE devices.[6] The recent announcement arising from the collaboration between China Mobile (the world's largest wireless carrier, with over 600 million subscribers) and SkyCross, for example, confirms that LTE handset development is truly global, and that a single chipset solution, with tunable antenna, is achievable, and will result in global manufacturing economies of scale, allowing carriers of all size to obtain leading edge LTE handsets, regardless of the spectrum in which they operate locally.[7]

Moreover, the evidence demonstrates that carriers operating in different spectrum bands will have no difficulty obtaining smartphones suitable for their spectrum bands. Both Clearwire and LightSquared are rolling out LTE in spectrum bands that, to AT&T's knowledge, will not be

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[4] http://transition.fcc.gov/presentations/04262011/michael-chard.pdf . *See also* http://www.qualcomm.com/news/releases/2011/02/14/qualcomm-delivers-faster-mobile-broadband-experience-new-higher-speed-lte.

[5] Comments of Nokia, Inc., WT Docket No. 11-65 (June 10, 2011), at 5.

[6] *Id.*

[7] *See* http://www.skycross.com/News/2011/062011_Tunable-MIMO-Antenna.asp); http://it.tmcnet.com/news/2011/06/21/5586637.htm (China Mobile and SkyCross successfully demonstrated world's first compact, tunable MIMO antenna, which covers 12 frequency bands ranging from 700 MHz to 2.7 GHz for TD LTE/LTE FDD/TD SCDMA/GSM EDGE/WCDMA deployments worldwide.)

used by any other U.S. carriers. Clearwire, for example, has trialed LTE in Phoenix in the 2.5 GHz band[8], and is not concerned about its ability to offer smartphones in that band. LightSquared is rolling out LTE in the L band, again likely to be the only LTE provider in that band.[9] Other carriers, such as Cellular South, are launching LTE using Band 12, which includes the 700 MHz A Block, and have had no difficulty obtaining support from infrastructure and handset manufacturers.[10] MetroPCS, the first U.S. carrier to introduce an LTE smartphone, is operating in the 1700 MHz band.[11] And all of this is occurring while LTE rollout is still really in its infancy – as the LTE eco-system matures, costs will fall and diversity and availability of handsets will increase.

Although the rollout of LTE thus will not undermine the global economies of scale inherent in handset research, development and manufacture, it is also worth noting that scale is not the only criterion that drives the process. As Qualcomm noted in its presentation to the Commission: "Scale is important but we are trying to enable the entire ecosystem."[12] Qualcomm cited specific examples of designing new chips for smaller carriers, confirming its commitment to providing solutions for carriers regardless of size.[13]

Finally, individual wireless carriers do not need to "go it alone" when it comes to working with handset manufacturers and chip companies to develop LTE phones that will work on the spectrum bands that they will be utilizing. The Open Handset Alliance is a coalition of mobile operators, handset manufacturers, semiconductor companies, software companies and

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[8] *See* http://www.clearwire.com/company/featured-story ("Because our 4G network has more spectrum than anyone, we can use a wider range of channels to deliver faster connections").

[9] *See* http://www.lightsquared.com/what-we-do/devices/ ("In 2012, LightSquared**'s** service will expand to include Smartphones and other innovative next generation devices. By connecting to the LightSquared network, Smartphones will be able to access an array of applications and services previously unavailable on a hand-held mobile device, including streaming high-definition video.")

[10] *See* https://www.cellularsouth.com/news/2010/20101117.html (announcing an alliance with "Samsung Mobile, the No. 1 mobile phone provider in the U.S., to supply Cellular South with two LTE Band Class 12 4G smartphone handsets as well as other new and innovative network solutions operating in the 700 MHz spectrum" to be rolled out in the 4th quarter of 2011).

[11] *See* http://www.metropcs.com/compare-4g-plans/ (offering the Samsung Galaxy Indulge 4G smartphone).

[12] Presentation of Michael Chard, Senior, Director, Business Development, Qualcomm CDMA Technologies, presented at the FCC's 700 MHz Workshop, April 26, 2011, *available at* http://www.fcc.gov/events/700-mhz-interoperability-workshop.

[13] *Id.* (citing two examples in which Qualcomm designed new chips for small carriers).

commercialization companies that is "strongly committed to greater openness in the mobile ecosystem."[14] It includes major international wireless carriers, such as Bouygues Telecom, China Mobile Communications Corporation, NTT DOCOMO, Telecom Italia, Telefónica, and Vodafone; major handset manufacturers as Alcatel, Kyocera, Lenovo, LG, Samsung and Sony Ericsson; and major chip makers such as Cypress, Intel, Qualcomm and Texas Instruments.[15] This organization helped develop the Android platform that has intensified the widespread proliferation of reasonably priced, innovative smartphones.[16] In addition, smaller U.S. wireless carriers can also benefit from additional purchasing scale economies through consortia such as Net America Alliance, LLC, which offer the benefits of scale purchasing power to rural wireless carriers.[17]

In short, concerns that the rollout of LTE across a much larger number of bands will somehow undermine the economies of scale that exist today with respect to 2G and 3G services with respect to handset design, development and manufacturing are without foundation. Post merger, carriers of all sizes will be able to obtain cutting edge LTE handsets at reasonable prices, regardless of spectrum bands in which they offer LTE services.

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[14] http://www.openhandsetalliance.com/oha_overview.html. Sprint itself has recognized the importance of the Open Handset Alliance, but claimed that the merger will substantially undermine the alliance. *See* CRA Reply Declaration , WT Docket No. 11-65 (June 20, 2011), ¶ 136, Contrary to the claims of Sprint's economists, however, T-Mobile's parent, Deutsche Telekom would remain a member of the Open Handset Alliance post-merger and the merger will have, at most, *de minimis* impact on the organization.

[15] http://www.openhandsetalliance.com/oha_members.html.

[16] http://www.openhandsetalliance.com/oha_overview.html

[17] http://www.netamericaalliance.com/advantage.html ("Alliance participants are able to purchase a full range of network equipment, customer premises equipment and user devices for deployment of local services at a discount negotiated by NetAmerica, with technology partners, on behalf of alliance members.").

If you have any questions or require further information, please contact me at 202-942-5499 or Richard.Rosen@aporter.com. Thank you for your assistance.

Sincerely,

/s/

Richard Rosen
Counsel for AT&T Inc.

Enclosure

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